CLAIMS

What is Claimed is:

1. A method for fabricating a membrane electrode assembly (MEA), said method comprising:

providing a proton conducting membrane in its protonated form having a first side and a second side; and

spraying a catalyst ink on the first side of the membrane to deposit a catalyst layer of a cathode or an anode of the MEA.

2. The method according to claim 1 further comprising spraying an ionomer layer on the membrane prior to spraying the catalyst ink on the membrane.

3. The method according to claim 1 wherein the catalyst ink has an ionomer to carbon ratio of about 0.8-1.2 to 1.

4. The method according to claim 2 wherein the catalysts ink has an ionomer to carbon ratio of about 0.4 to 1.

5. The method according to claim 1 further comprising drying the MEA under a heat lamp to dry the catalyst layer.

6. The method according to claim 1 wherein spraying the catalyst ink includes spraying the ink over several passes to deposit the ink on the membrane to the desired thickness.

7. The method according to claim 1 further comprising spraying the catalyst ink on the second side of the membrane to deposit a catalyst layer of the other of the anode or the cathode.

8. The method according to claim 1 wherein the catalyst ink includes a catalyst, solvent and half the ionomer concentration.

9. The method according to claim 1 further comprising clamping the membrane in a clamp to prevent membrane wrinkling.

10. The method according to claim 1 further comprising soaking the MEA in water.

11. The method according to claim 1 further comprising soaking the MEA in sulfuric acid to remove excess solvent and ensure protonation.

12. The method according to claim 1 further comprising hot-pressing the MEA after the catalyst ink is sprayed on the membrane to remove excess solvent and compress the catalyst layer.

13. A method for fabricating a membrane electrode assembly (MEA), said method comprising:

providing a proton conducting membrane in its protonated form;

spraying a catalyst ink on the membrane to deposit a catalyst layer of a cathode or an anode of the MEA, wherein spraying the catalyst ink includes spraying the ink over several passes to deposit the ink on the membrane to the desired thickness; and

drying the MEA under a heat lamp to dry the catalyst layer.

14. The method according to claim 13 further comprising spraying an ionomer layer on the membrane prior to spraying the catalyst ink on the membrane.

15. The method according to claim 14 wherein the catalysts ink and the ionomer spray each have an ionomer to carbon ratio of about 0.4 to 1 so that the catalyst layer has an ionomer to carbon ratio of about 0.8-1.2 to 1.

16. A membrane electrode assembly (MEA) comprising:

a proton conducting membrane in its protonated form, said membrane having a first side and a second side; and

a first catalyst layer sprayed on the first side of the membrane with a catalyst ink to form a cathode or an anode of the MEA.

17. The MEA according to claim 16 further comprising an ionomer layer that is sprayed on the membrane prior to the catalyst layer being sprayed on the membrane.

18. The MEA according to claim 16 wherein the catalyst ink has an ionomer to carbon ratio of about 0.8-1.2 to 1.

19. The MEA according to claim 17 wherein the catalysts ink has an ionomer to carbon ratio of about 0.4 to 1.

20. The MEA according to claim 16 further comprising a second catalyst layer sprayed on the second side of the membrane with a catalyst ink to form the other of a cathode or an anode of the MEA.